|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Unit 2: Cells & Cell Processes** | | | | | | |
| Name: | Start Date: | | | 11/29/16 |  |  |
|  | Quest Date: | | | 12/16/15 |  |  |
| Period: | Teacher: Ms. J | | | |  |  |
|  |  |  |  |  |  |  |
| **Cells & Cell Processes** | Submitted | Resubmit | Correct | Evidence of Learning | Page | Date |
| **Objective 10:** Explain how genetic and environmental factors can influence the cell cycle and lead to cancer. |  |  |  | Catalyst: KWL Chart |  |  |
|  |  |  | Notes: Cancer |  |  |
|  |  |  | HW: Cancer- Mitosis Gone Wrong! |  |  |
|  |  |  | Catalyst: Vocab Review |  |  |
|  |  |  | Cancer and the Cell Cycle Animations |  |  |
|  |  |  | Types of Cancer Jigsaw Activity |  |  |

**Unit 2: Cells & Cell Processes**

Start Date: 11/28/16 Quest Date: 12/16/16

**Objective 9:**  Analyze how cells grow and reproduce in terms of interphase, mitosis, and cytokinesis.

*Essential Question:* What is the cell cycle?

*Essential Question:* What is the sequence and function of mitosis?

*“I Can” Statements:*

* Describe/outline the stages of the Cell Cycle: Growth 1, Synthesis, Growth 2, Mitosis, and Cytokinesis
* Organize diagrams of mitotic phases and describe what is occurring throughout the process

**Objective 10:** Explain how genetic and environmental factors can influence the cell cycle and lead to cancer.

*Essential Question:*  What is cancer?

*Essential Questions:* What causes cancer?

*Essential Questions:* How are different cancers caused, treated, and prevented?

*“I Can” Statements:*

* Describe the relationship between mutations in the DNA and uncontrolled cell growth
* Use an example of a specific cancer to illustrate how cancer is caused, treated and prevented

**Objective 11:** Explain how instructions in DNA lead to cell differentiation and result in cells specialized to perform specific functions in multicellular organisms.

*Essential Question:* How do cells become specialized?

*“I Can” Statements:*

* Explain that cells differentiate and give examples of differentiation/specialization
* Describe stem cells as undifferentiated and discuss how this is important to scientific research
* Explain the relationship between DNA expression and the type of cell that develops through differentiation

**Catalyst 1:** Fill out the following chart including what you already know about cancer, what you want to know, and by the end of the week we will fill out the L column concerning what you learned.

|  |  |  |
| --- | --- | --- |
| **Know** | **Want to know** | **Learned** |
|  |  |  |

**Catalyst 2: Vocab. Review**

|  |  |
| --- | --- |
| **Tumor** |  |
| **Carcinogen** |  |
| **Oncogene** |  |
| **Malignant** |  |
| **Benign** |  |
| **Metastasize** |  |

Biology I Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Notes: Cancer Period: \_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

**I. Fast Facts**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the most prevalent type of cancer in American men
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the most prevalent type of cancer in American women
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is responsible for the most cancer related deaths in the US for both men and women
* \_\_\_ in \_\_\_\_\_ deaths are caused by cancer

**II. What is Cancer?**

* Cancer is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_cell division
  + The cells don’t stop \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Like a car with no brakes!
  + *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* are proteins thatput the brakes on the cell cycle
* Cancer can spread to new places, this is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Cancer cells form *tumors*: a mass of cells that have divided uncontrollably and can damage surrounding tissue

**III. What causes cancer?**

* Cancer arises from the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of a normal gene.
* Mutated genes that cause cancer are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* It is thought that several mutations need to occur to give rise to cancer
* Cells that are old or not functioning properly normally self destruct and are replaced by new cells. (Arrested in G0 or programmed to die=apoptosis)
* However, cancerous cells do not self destruct and continue to divide rapidly producing millions of new cancerous cells.
* A factor which brings about a mutation is called a\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Any agent that causes cancer is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_and is described as carcinogenic.
* So some mutagens are carcinogenic.

**\*Use this space to draw a diagram depicting the development of cancer\***

**IV: Traits of Cancer Cells**

1. Independent of \_\_\_\_\_\_\_\_\_\_\_signal from other cells often, they simply divide independently and very fast
   1. Caused by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Ignores \_\_\_\_\_\_\_\_\_\_\_signal causing defective damage control, so problems not corrected.
   1. Mutation in tumor \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_genes. Ex. *p53*
3. No cell suicide (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
4. No limit to cell \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- formation of blood vessels, allows for necessary nutrients to be supplied to the growing tumor
6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - ability to move to other tissues
   1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: do not move from tumor site
   2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: invasive cells, can travel in blood and lymph system and cause cancer in other parts of the body

**V. Benign or Malignant?**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_tumours do not spread from their site of origin, but can crowd out (squash) surrounding cells eg brain tumour, warts.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_tumours can spread from the original site and cause secondary tumours.
  + This is called\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. They interfere with neighbouring cells and can block blood vessels, the gut, glands, lungs etc.
* Why are secondary tumours so bad?
  + Both types of tumour can tire the body out as they both need a huge amount of nutrients to sustain the rapid growth and division of the cells.

**VI. Carcinogens**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are factors that cause damage to DNA leading to cancer
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_– X Rays, UV light
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – tar from cigarettes
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_– papilloma virus can be responsible for cervical cancer.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_– Some families are more susceptible to getting certain cancers. Remember *you can’t inherit cancer* its just that you maybe more susceptible to getting it.

Biology I Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Types of Cancer Jigsaw Read Period: \_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

**Part I. Article**

*Read your assigned article and answer the questions below.*

Article Title:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What type of cancer is discussed in your article?  
   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What causes the development of this type of cancer?  
   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Are there steps that can be taken to prevent this type of cancer? Or are there genetics screenings to prevent it?  
   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What are the risk factors for this cancer? What type of people are at the highest risk?  
   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. What is the most common method of treatment for this cancer?  
   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Part II. Jigsaw Reading.**

Fill out the chart to include information about the other articles your classmates read.

|  |  |  |  |
| --- | --- | --- | --- |
| **Type of Cancer** | **Causes** | **Risk Factors** | **Prevention?** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |